

JUN 02 2010

Application No.: 10/590,011

Amendments to the Claims:

This listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (Currently amended): A catalyst structure for use in manufacturing a carbon nanotube of crystalline carbon by means of vapor deposition, wherein

the catalyst structure is ~~a columnar body~~ shaped as a pipe with its even upper surface serving as ~~said a~~ crystal growth surface,

the catalyst structure includes a catalytic material that forms a ring ~~or a whirl~~ on the crystal growth surface, and

at least part of a side of said ~~columnar body~~ structure shaped as a pipe has a non-catalytic material with substantially no catalytic activity with respect to a growth of said crystalline carbon.

2 (Cancelled)

3 (Previously presented): The catalyst structure according to claim 1, wherein said non-catalytic material is made of one or more selected from the group consisting of Ag, Au, Ru, Rh, Pd, Os, Ir and Pt.

4 (Previously presented): The catalyst structure according to claim 1, wherein said catalytic material is made of one or more selected from the group consisting of Fe, Co, Mo and Ni, and said non-catalytic material is made of Ag and/or an Ag containing alloy.

Application No.: 10/590,011

5 (Previously presented): The catalyst structure according to claim 1, wherein said crystal growth surface has a multilayer structure with catalytic and non-catalytic material.

6 (Previously presented): The catalyst structure according to claim 1, wherein at least said crystal growth surface of said catalytic material is oxidized.

7 (Canceled)

8 (Withdrawn): A method of manufacturing a carbon nanotube, the method using a catalyst structure having a catalytic material that forms a ring or a whirl on a crystal growth surface, said crystal growth surface being contactable with a feedstock gas for vapor deposition of crystalline carbon on said crystal growth surface.

9 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 8, wherein said carbon nanotube is produced at a temperature not higher than a deformation temperature of said non-catalytic material.

10 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 8, wherein, in an assembly of a plurality of catalyst structures, a throughhole is provided between said catalyst structures within said assembly.

Application No.: 10/590,011

11 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 8, wherein said feedstock gas is flown in a direction perpendicular to said crystal growth surface.

12 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 8, wherein a columnar assembly is formed by a plurality of catalyst structures, and a non-catalytic material is provided in contact with at least part of a side of said assembly with its upper surface serving as a crystal growth surface, and the variation in a cross section of catalytic material measured on the crystal growth surface among said plurality of said catalyst structures is not more than CV 10%.

13 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 8, wherein said crystal growth surface undergoes a sputtering.

14 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 13, wherein said sputtering is performed using cluster ion beam or ultrashort pulse laser.

15 (Withdrawn): The method of manufacturing a carbon nanotube according to claim 8, wherein said catalytic material undergoes a reactivation employing one or more of chemical polishing, physical polishing and sputtering.